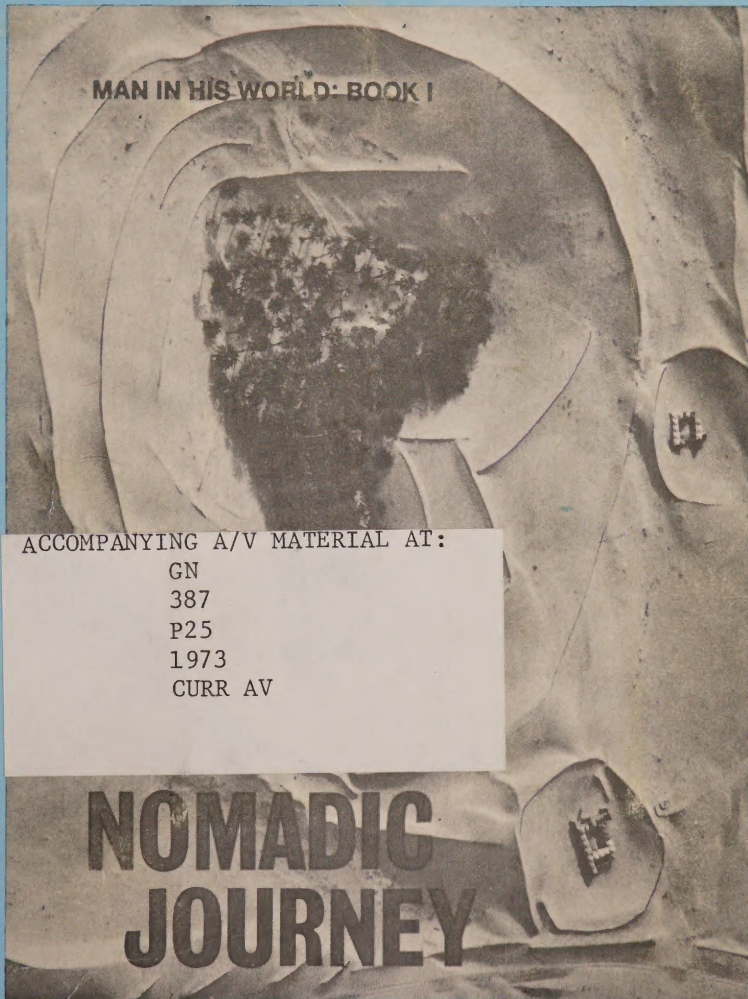




# Teachers' Guide

## NOMADIC JOURNEY



ACCOMPANYING A/V MATERIAL AT:

GN

387

P25

1973

CURR AV

CURRICULUM

G

73

M26

Bk.1

TCH.GD.

CURR

## MAN IN HIS WORLD

Ex LIBRIS  
UNIVERSITATIS  
ALBERTAENSIS







# Teachers' Guide



**Fitzhenry & Whiteside Limited**

© 1971 Fitzhenry & Whiteside Limited

No part of this publication may be reproduced or transmitted in any form, including any storage or retrieval system, or by any means, electronic, mechanical, photographic, or recording without permission in writing from the publisher.

Printed in Canada

LIBRARY  
UNIVERSITY OF ALBERTA

## Main Objectives

The philosophy behind this series of books is that the process of learning is more important than the acquisition of facts. The main purpose is to *involve* the child in the learning experience so that he may master certain skills and concepts, some of which are:

1. What is a desert?
2. How plants and animals have adapted to a dry environment in order to survive.
3. How nomadic peoples have survived in the past and in the present in an environment where the quest for water is the key to survival.
4. How some people, because of their technology or access to a water supply, do not have to be nomadic.
5. How dry regions create both a risk and a challenge to the crops, livestock and life of the desert dweller.
6. How man, whether he is a nomad, oasis dweller or an oil worker, co-operates with other men make life as full as possible.
7. How the introduction of modern technology is slowly changing the physical and cultural face of the desert.

To best achieve these goals, it is necessary to create an interest on the child's part. The teacher acts as a guide or catalyst to the child to encourage him to think for himself, to experiment, to examine materials critically, draw conclusions and formulate hypotheses. This can be done in group or individual situations. For this reason, the emphasis has been placed on the method of learning.

### General guide to the use of materials

This book has been written with a wide range of exercises, materials and sketches. However, additional materials in the form of books, pictures and films are necessary to provide the child with the resources he will need in this learning approach. It may also be noted that the teacher should be selective in choosing exercises and activities to suit the needs, interests and abilities of her pupils.

The pictures throughout this book can act as a springboard introduction to a lesson, for explanation of a point, a review of concepts developed or an opportunity for a child to explore further a topic of interest to him.

#### DID YOU KNOW?

... The fat tail of the desert sheep is used for the same purpose as is the hump of the camel!

These small factual pieces of information are scattered throughout the book as interest catchers or incentives for further research in any direction. The child should be given the opportunity to explore on his own an area which is of particular interest to him. For this reason it is important that the teacher have adequate resource material available either from the school library or within the classroom.

#### THINGS TO DO

Take some beans. Place a damp paper towel around the inside of a glass jar. Place the beans between the towel and the jar. Keep the towel damp by sprinkling water on it each day. Observe how the dormant beans begin to sprout to life and develop roots.

It is not feasible that all of the activities outlined can be done within the classroom. The ideas that are presented give both the teacher and pupils the opportunity to pursue their interests inside and outside the classroom as well, opening up possibilities of using the library and home facilities. Many of the experiments can be carried on as part of their Science programme.

#### GEOLOGISTS MISSING

Stumbling, sometimes dropping to their hands and knees, the two men stagger along ...

... It has been hours since they have tasted water.

The story in this book is used as a thread to connect the various aspects of desert life. Chapters in the story can be used as lesson introductions, stimuli for oral and written compositions, role playing and reading. It also provides an additional opportunity for the child to grasp a greater insight into the life of the desert dweller through the eyes of young Hamid.



## Outline of Book

### I. Introduction pp. 1 – 7

The introduction of the book deals with the concept of "What is a Desert?"

*Major Concepts to be developed:*

1. lack of available moisture because of either low precipitation or high evaporation
2. temperature variations within deserts
3. physical appearance of desert regions
4. deserts are the results of a series of physical controls:
  - a) topography
  - b) climate
  - c) hydrographic

*Suggested Approaches to Topics*

When introducing any topic the interest of the pupils should be aroused. Examples:

- a) tape or oral reading of the chapter "Geologists Missing," or any other suitable story from either a pupils' reader or resource book.
- b) picture slide or photo of a desert scene e.g. page 4 – "Tragedy of the Desert."

These methods of introduction can be used in several ways to involve the pupils

- oral discussion within groups re pictures or conclusion of story
- role playing of any situation in the story
- sketching scenes within the story
- written and oral compositions.

With the child's interest aroused, we can progress to the main topic of "What is a Desert?"

#### WORD ASSOCIATION GAME – "DESERT"

Divide the class into groups of 4 – 6 pupils. Have the children choose a secretary to record words (preferably a fast writer). Explain what "word association" means to the class. Tell them they will be given a word (desert) and each person in turn says the first word which comes to mind. The secretary records their answers, and they keep answering in turn until they are told to stop (approximately 2 – 3 minutes). Some words may be repeated as the game progresses. After completion, each secretary reads the list of words of her particular group which can lead to further discussion after this is done.

The "word association" game using "desert" will indicate the preconceived ideas that the children have on this topic.

By examining the pictures of various desert scenes on page 2 of the book or pictures or slides from the resource center of the library, the children in groups are asked to examine each critically and to decide "Does the picture show a desert?" Pictures that do not show deserts can also be included. The children should co-operatively make a list of the characteristics that support their conclusions. After the pupils have made a report of their finding, a comparison of their lists should indicate that the one common characteristic is lack of water.

#### DESERTS OF THE WORLD

Let's do a little extra research.

*Before* studying the map on page 1, explain simply the causes of deserts and have the class use this information to plot where deserts should be.

For example, first design a Pre-lesson to show that high pressure systems are characterized by clear, sunny skies, and limited precipitation. Second, study a map of the world showing the major high pressure cells. Third, on a blank map of the world, shade in the areas where dry regions would be expected.

Similarly, a Pre-lesson could be utilized discussing prevailing winds, relief rainfall, and rainshadow effect. Then by checking a map solely to see where prevailing wind systems are obstructed by high mountains, the class can again determine where desert areas might be located. These should also be marked on a blank map of the world.

The moisture reducing effects of cold ocean currents on prevailing winds can be explained in a Pre-lesson. This should be followed by a search for areas where cold ocean currents parallel the coasts. Again, suspected dry regions can be plotted on blank maps.

By overlapping the various maps the students will discover that they have duplicated the shading in several areas. This will provide fairly concrete proof that such regions must be deserts.

The class is now ready to check its desert map with an actual map showing the deserts of the world. On confirming their choices, they will be ready to proceed with exercise 1 on page 1.



An explanation of the climate statistics for various desert regions will reinforce the concept that the lack of available moisture is the main characteristic of a desert. A discussion of the effect of high temperatures (high evaporation rate) and cold temperatures (freezing) on available moisture would show their importance on the creation of dry regions, reference page 4 and 18.

## Answers to problems within Section I

### page 1 Question 3

Before actual size in square miles is used as a basis for comparison, the child should be given the opportunity of visually comparing the size of the Sahara Desert with various other countries and continents. Following this, the children can determine the accuracy of their finding by referring to the actual area in square miles.

Area of Sahara Desert – more than 3,000,000 square miles

Area of various Countries and Continents (ref. Canadian Oxford School Atlas)

Australia – 2,975,000 square miles

Brazil – 3,288,000 square miles

Canada – 3,845,744 square miles

China – 3,759,000 square miles

U.S.A. – 2,974,726 square miles

U.S.S.R. – 8,707,870 square miles

### p. 3 Question 3

The answer to this question – (“What fraction of the Sahara is made up of sand?”, answer 8 – 10%) creates an interesting problem for the children to attempt to solve by discussion – of what material is the remainder of the desert made? This answer can be found with an examination of the pictures on page 2.

### p. 3 Question 4

Sand is formed by the decomposition of rock by various weathering agents – wind, water, temperature change processes including heat expansion, frost shattering, abrasion. Particles can be carried thousands of miles from their origin and deposited on plains and beaches.

## II. How plants and animals have adapted to a desert environment pp. 8 – 13

### Concepts to be developed

1. How the survival of plants and animals in a dry environment is dependent upon their ability to find and retain water.

2. How, after a sudden shower, some plants will grow and remain green for many months of drought.

### Suggested approaches

Using pictures (pp. 8, 9, 12), sketches or actual plants and animals (from the Science Room or home pets) allow the children to examine and work through the exercises on pages 8 – 13, in group or individual activity lessons. Animal stories from the library can also be used effectively in this unit.

## Answers to questions and problems within Section II

### page 8

The children should be given the opportunity, if possible, to examine actual plants of the desert variety. This exercise can be set up as a problem solving situation.

### PROBLEM

1. Examine the sketches of the two root systems and the Did You Know? on p. 9.
2. How does the pattern of the root system enable the plant to get water?
3. Examine the sketch on p. 9 and the photograph on p. 2.
4. For what reason are the plants found in scattered formation?
5. How do many plants protect themselves against the animals who want their moisture?

### SOLUTION

An explanation of the formation of stoma of the plants will explain how some plants control the loss of water. The stoma are minute openings in the surface of the plant which allow the plant to take in  $O_2$  and water and give off  $CO_2$  and water. The cactus is a unique plant in that it can control the opening and closing of the stoma thus controlling transpiration and in effect retain water during a season of drought. It has been found that the cactus upended lying on its side can survive from 2 – 3 years. The root systems are both horizontal and vertical. Some stretch to tremendous depths to tap the water supply in the soil – such as bushes. The cactus with its ability to retain water does not need a deep root system and therefore relies upon the surface water, obtaining it with a vast horizontal root system. The desert plants are scattered to eliminate or diminish the competition for water and allow extensive root development to obtain water.



The shape of the leaf is small and narrow or with needles, grasses are spikelike and extend or hang vertically to cut down on transpiration of water. By examining the *Did You Know?* on page 9, a child can further research the topic of how desert plants reproduce.

Plants such as the cactus have additional protection with thorns to control animals who want their moisture. It has been found that plants can spring up during a rain, stay green and last for a year or more.

#### *p. 10 Question 2*

By referring to the *Did You Know?* on page 11, the questions on the Pedestal Rock can be answered.

#### *page 13*

With reference to the exercise on the kangaroo rat, there is no correct answer to be given. The purpose behind this exercise is to allow the child the opportunity to examine the data and allow him to present and substantiate his ideas through discussion in groups or as individuals. This allows the child to think for himself, to question the findings of others and to redefine his own thinking as he works through the exercise. Other animals can be discussed along with those on page 15, e.g. dingo, gerbals (many Science Rooms are equipped with gerbals; some are home pets). The children can in groups do research to find how an animal which of interest to them has adapted to a desert environment.

### **III. How man has adapted to a desert environment pp. 14 – 60**

#### *Concepts to be developed*

This unit has been divided in three sections

- a) the nomadic dweller
- b) the oasis dweller
- c) the modern oil camp worker.

1. How nomadic peoples have survived in the past and in the present in an environment where the quest for water is the key to survival.

2. How some people, because of their technology or access to a water supply do not have to be nomadic.

3. How man, whether he is a nomad, oasis dweller or an oil worker, co-operates with other men to make life as full as possible.

4. How the introduction of modern technology is slowly changing the physical and cultural face of the desert.

#### *Suggested activities*

Activities for this last section have been described in detail in the book. Children may work as individuals or in group situations. However, as much as possible it is meaningful to allow the child, through either role playing, sketching or composition, to experience some of the activities of the Arab such as:

1. Construction of a life-size Arab tent made of materials children can bring from home.
2. Arab Day, in which the children become "Arabs for a Day" in their dress, mannerisms and diet. Each child can volunteer to bring a small portion of food (pages 41, 42) and by using a hot plate an enjoyable meal can be prepared.

### **Answers to questions and problems within Section III**

#### *page 14*

top left – Pueblo      top right – Navajo Hogan  
middle right – Tent  
bottom left – Zeriba bottom right – Mongol Yurt  
*Hamid's summer playground*

An exercise to allow the children to discover the type of home in which Hamid lives can be both interesting and challenging to the pupils.

#### **PROBLEM:**

*Draw a sketch of Hamid and grasslands p. 14. Sketch of poles used by Arabs when building their tents. Using only the materials pictured, construct a home in which Hamid and his family can live. The house must be easily and quickly erected by the Arabs.*

Have the pupils work in pairs or small groups to solve the problem. The children can be given various pieces of equipment to use, in the place of the high desert grasses, to make a model of Hamid's home, e.g. straws, cardboard paper strips or straw for the grasses, and popsicle sticks, sucker sticks or twigs for the poles. A variety of structures will be built by the pupils and by careful observation and questioning of each other's techniques, it can be found that the Zeriba, which is the name given to this "grass" house, is the most practical and easily assembled home for the Arab people. In the event that no model is similar to the Zeriba, this presents another interesting challenge for the children to discuss why they did not construct a house as the Arabs do.



#### page 17

How does his clothing protect the Arab against temperature changes? The turban-like head-gear and veil (litham) shade the eyes from the sun and protect the face (mouth and nose) from the blowing sand and insects. The loose clothing or robes act as insulation against both heat and cold. The layer of air between the clothing and body acts as insulation against the high temperatures of the day. It also helps to retain body heat during the cold nights on the desert. Many Arab people wear light coloured clothing which helps to reflect the heat of the sun.

#### page 18 – “Pardon Our Errors”

The climate graph on page 18 has a typographical error. The temperature should read from the top: 90F, 86F (not 82F), 82F (not 86F), 78F, etc.

The total rainfall shown on the climate graph is approximately 2.2 inches. The amount of rainfall in most desert regions is less than 10 inches.

When deciding what season it would be best to cross the desert, encourage the children to keep in mind the two major problems of desert travel are water and extreme temperatures (season – winter).

#### pages 20, 21

The diagram on pages 20 – 21 is the first in a series (see pp. 30 – 31 and 56 – 58). The purpose is to follow the progression of this nomadic family from their summer home on the edge of the desert to their winter feeding areas near the oasis within the desert. Although they appear to be sand dunes, the pink mountains in the background, illustrate mountains. This can prove confusing in the other pictures later in the book. It would be interesting to allow the children to offer suggestions as to how they would improve on these sketches for more clarity.

#### Moving day

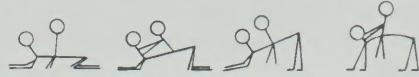
An interesting assignment to give the children on the topic of moving is to interview their parents or neighbours on the work involved and problems created when moving. The interviews can be written or taped and the children can readily understand the organization and hard work needed for this task. An interview with a local Moving and Storage Business will also indicate the cost involved.

#### page 22 Game – Ride the Camel

On page 22 is an outline of how to play act the

mounting of a camel. This can be simulated much to the delight of the students by working in pairs. The sketches below will illustrate how this can be done.

By jerking quickly into the various positions, the pupils can get an idea of the actual thing.



#### page 24

The exercise on the camel can be handled in a similar way to that of the Kangaroo Rat (page 13) outlined in the first section of the guide book. It is beneficial to encourage the child as much as possible to examine critically and formulate his own hypotheses.

#### page 26

The scale of the map on page 26 is 1 inch = approximately 57 miles. An additional step to this exercise is to sketch a similar diagram on the blackboard or on a transparency, changing the position of wells to suit the needs of your class. By marking some wells as dry and by sketching the few sparse grassy areas, the problem is made more difficult for the child.

#### page 27

When moving across the desert, the Nomad can progress only as fast as the sheep and goats in his herds. Rather than finding the exact distance the herd will cover per day, it is important to understand why they cannot follow a direct route. The herds will wander, often in opposing directions, to find grassy patches on which to feed.

#### page 32

The shifting sands of the desert often encroach upon and bury trees, wells, and homes. Crops planted one day can be buried the next. Refer to the danger of sandstorms to man in the story “Darkness at Middy.”

#### page 39

**Question 2.** “M” is more desirable because of the shortest distance to the water table.

**Question 3.** It is desirable to know the following before digging a well:

1. the basic type of rock through which you are drilling
2. the depth of the water table.

The questions at the bottom of the exercise are another example of a situation where there is a desirable answer – to dig the well close to the crops needing a greater amount of water. However, the children should be given

the opportunity of choosing their own sites and expressing the reasons behind their choices.

page 40

Methods of obtaining water:

top picture – sakia

middle picture – shaduf

bottom left – a draw well

bottom right – a modern pump

page 43

Spices and supplies not grown or found at the oasis must be purchased by trading. The Nomads trade with the caravans at the oases and with settlements along the fringe of the desert (see story on pp. 43 – 45, “Orderly Confusion”). Spices are brought from the Far East, India and the Mediterranean countries.

page 46

Correct the diagram on page 46 with a revised sketch showing the old and deep water tables as curved rather than straight and remaining in the aquifer.

Aquifer is explained in *Did You Know?* page 47. The oil companies in their search for oil will drill through the old water table. This additional pumping of water can lower the old water table, thus affecting the wells at the nearby oases. For this reason, close co-operation and the sharing of water is necessary between the oil companies and the oases dwellers.

pages 50 – 51

The trencher is a machine which digs a ditch in which to lay the oil pipe. It is laid below the ground approximately 6 feet to reduce weathering and corrosion. Because of the enormous size of the pipe, heavy equipment is necessary to complete this task. It is tarred and wrapped with a protective covering before it is placed in the ground. Gas pressure testing is used to check for leaks or pipe damage below the surface. At various intervals along its length, pumping stations are set up to ensure an even flow of oil through the pipeline. An excellent book for further research is ARAMCO by the Arabian-American Oil Company.

page 53

The oil camps are populated by men because of the lack of facilities for women and children, and the temporary nature of exploration and drilling operations. Workers would have a technological background for this type of job. Power is supplied by a fuel generator and

recreational activities are usually limited. All supplies must be brought in by air or truck from the outside world or local oases.

page 55

Oil, gas and water underground always take the same position with respect to each other. Oil is lighter than water and the gas bubbles to the top. This can be illustrated by mixing cooking oil in a water solution. Natural gas is pumped back into the ground to provide additional pressure to force the flow of oil upward.

### Resource suggestions for pupils

#### BOOKS

*Islands of the Sahara* by Lore Richter.

Edition Leipzig

*Getting to Know the Sahara* by Charles R. Joy. Coward McCann, Inc.

*The Tuareg* by Sonia Bleeker. William Morrow & Company

*The People of Africa* by Colin Turnbull.

World Publishing Company

*The Illustrated Book About Africa* by Felix

Sutton. Grosset & Dunlop

*Tradition and Change in African Tribal Life* by

Colin M. Turnbull. World Publishing Company

*The Desert*. Time-Life Inc.

#### PICTURE COLLECTION

From library.

#### FILMS

*Oil in Libya*. (From the Visual Education Centre, Toronto)

*Bedouins of Arabia*. (From the Visual Education Centre, Toronto)

*The Empty Quarter*, parts I and II. (From the Visual Education Centre, Toronto)

*Desert and How Man Uses Desert Valleys*.

(From the Visual Education Centre, Toronto)

*Life in the Sahara*. (From the Visual Education Centre, Toronto)

*Nile Valley and Its People*. (From the Visual Education Centre, Toronto)



G 73 M26 BK-1 TCH-GD-  
MAN IN HIS WORLD SERIES

39351560 CURR



\*000006010946\*

G 73 M26 Bk.1 tch.gd.  
Man in his world series.

0256671P CURR

2219729

CURRICULUM  
EDUCATION LIBRARY

---

**B10711**

---

*Teacher's Guides*

---

Are being made available for all studies.

Nomadic Journey

Gifts of the Nile

Mexico Emerges

Eskimo – Journey through time

Grassland Safari

and subsequent titles



**Fitzhenry & Whiteside Limited**

150 Lesmill Road, Don Mills, Ontario

---